

Determinants of Patient Satisfaction in a Large, Municipal ED: The Role of Demographic Variables, Visit Characteristics, and Patient Perceptions

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We investigated predictors of patient satisfaction in a large, municipal emergency department (ED). Patients were telephoned 10 days postvisit, and satisfaction was assessed using a structured survey with 22 items measuring several domains, as well as the estimated length of stay. The dependent variables consisted of ratings of overall satisfaction and likelihood of recommending the ED to others. Data were obtained from 437 (38.7%) patients. Univariate statistics revealed strong relations between indicators of perceived care and both dependent variables, with weaker and mixed findings pertaining to demographics and visit characteristics. The final logistic regression predicting overall satisfaction included the following items ($P < .05$): degree to which staff cared for the patient as a person, perceptions of safety, understandability of discharge instructions, nurse's technical skills, and satisfaction with wait for physician. Likelihood to recommend was associated with ($P < .05$): degree to which staff cared for the patient as a person, understandability of discharge instructions, perceptions of safety, age, and insurance status. Patients' perceptions of care, rather than demographics and visit characteristics, most consistently predicted satisfaction. However, differences were observed between the specific predictors for overall satisfaction and likelihood to recommend, providing a possible explanation for inconsistencies observed in the literature. (*Am J Emerg Med* 2000;18:394-400. Copyright © 2000 by W.B. Saunders Company)

Recently, several large studies have been published investigating predictors of patient satisfaction with emergency care.¹⁻⁷ Despite this, consistent conclusions regarding the underlying determinants of patient satisfaction are lacking. For example, some experts have suggested that wait times are critical in determining overall patient satisfaction,^{1,8,9} whereas others have shown that interpersonal skills, humanitarian qualities of the staff, and the amount of information given to a patient about his or her condition are paramount.^{2,6,7} Other inconsistencies relate to the relative importance of ED personnel's technical skills,^{3,4} the effect of acuity,^{1,3,10-14} and whether the behaviors of physician or

nursing staff are most influential in determining patient satisfaction.^{2,4,6}

Considering the varied findings in the literature, it seems prudent to continue exploration of this area until recognizable and replicable patterns emerge. We sought to further explore predictors of patient satisfaction with emergency care in a large, municipal ED. Most published studies have used hospitals frequented predominantly by middle-class and/or insured patients.^{1,3,4,6,14} Our study extends the knowledge of predictors of patient satisfaction to a predominately disadvantaged, minority, underinsured population. Also, previous satisfaction researchers have used different dependent variables, with some using overall satisfaction ratings and others using patients' ratings of their likelihood to recommend the ED to others. We assessed both of these variables and computed separate prediction models for each to compare the similarities and differences of the results.

METHODS

Setting and Population

Our ED has 27 beds and receives approximately 85,000 patient visits per year. It is part of the Louisiana state-supported health care system. Although few other states have such a state-supported health care system, our hospital is similar to other municipal EDs in the country, including county-supported and innercity hospitals. Like these other municipal hospitals, our patients are predominately low in socioeconomic status. Patients are predominately low income (median annual household income less than \$12,000), uninsured (approximately 80% to 85%), poorly educated (less than 50% are high school graduates), and black (approximately 70% to 75%). After initial sign-in, patients are triaged using a combination of vital signs, history, and presenting symptoms.¹⁵ Patients are classified as emergent, urgent, or nonurgent. From 7:00 AM to 5:00 PM Monday through Friday, nonurgent patients are seen in a walk-in clinic. When the walk-in clinic is not in service, nonurgent patients are seen in the ED proper. Examples of emergent conditions include altered mental status, chest pain, and trauma with deformity; urgent conditions include minor trauma, vomiting, and weakness; and nonurgent conditions include upper respiratory tract infections and follow-up from a previous visit.

Every fifth patient who visited the ED during the study period (January 21 to February 21, 1998) was considered a potential subject. Exclusion criteria included a diagnosis involving suicidal/homicidal ideation, psychosis, dementia, and/or substance intoxication. Prison inmates were also excluded. If a patient was younger than 17 years, the person who accompanied the child was

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Manuscript received August 20, 1999, returned September 20, 1999, revision received November 1, 1999, accepted November 22, 1999.

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Key Words: Patient satisfaction, demographics, visit characteristics, patient perceptions.

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0735-6757/00/1804-0008\$10.00/0

doi:10.1053/ajem.2000.7316

interviewed at follow-up. If the child was an older adolescent and no person accompanied him/her to the ED, then the adolescent was interviewed. Patients were enrolled regardless of disposition from the ED.

Protocol

The patient's chart was reviewed by the senior author and the following information abstracted:

Patient Demographics: age, gender, race/ethnicity (black, white, other), insurance status (indigent/free care, Medicaid, Medicare, commercial insurance/health-maintenance organization)

Visit Characteristics: priority level (emergent, urgent, nonurgent) based on previously described triage categorization method,¹⁵ time of presentation, day of week of presentation (weekday versus weekend), actual length of stay (LOS; from registration to discharge/transfer/admit), ED census for day of visit.

The telephone number obtained during routine registration was used to attempt contact with the patient. A single, trained interviewer conducted the assessments 7 to 10 days after their visit. She called each number a maximum of three times. One call was made between 08:00 and 12:00, one between 12:00 and 18:00, and one between 18:00 and 21:00. If there was no answer, the line was busy, or the patient was not available on the first call, the interviewer made two more attempts across the aforementioned times. If someone other than the patient answered the telephone, she solicited information regarding the best time to call to guide her further efforts. If the patient was a child, she asked to speak with a primary caregiver who accompanied the child to the ED. The ED staff was blind to the study to reduce the risk of a Hawthorne Effect (ie, behavior change as a result of knowing one is being observed). Patients were not told that they were going to be contacted beforehand except as may have occurred for clinical reasons during the routine course of their treatment in the ED.

Patient Satisfaction: Patient satisfaction was assessed using a structured telephone interview with 20 care-related indicators measuring several domains, including satisfaction with registration, nursing staff, physician staff, wait times, discharge (DC) instructions, and other miscellaneous areas. Two global indices of satisfaction were also assessed and acted as the dependant variables: overall satisfaction with care and likelihood to recommend ED to others. Patients were asked to rate each item on a five-point Likert-type scale: 1, very poor; 2, poor; 3, average; 4, good; 5, excellent. Finally, the interviewer asked patients to estimate how long they stayed in the ED, from registration to discharge/transfer. Cronbach's alpha coefficient for the survey was 0.94, which indicates the scale was internally consistent and reliable.

Statistical Analyses

For the univariate analyses, the appropriate parametric or nonparametric tests were done based on the shape of the distribution for the individual variable. T-tests were conducted on age, time of presentation, volume/census, perceived length of stay, and actual length of stay. Chi-squared tests were conducted for gender, race/ethnicity, insurance status, day of week, and priority level. Mann-Whitney U tests were used for all the patient perception

variables (except, as noted earlier, for perceived length of stay). Overall satisfaction and likelihood to recommend were dichotomized to simplify calculations.^{5,7} Ratings of one, two, or three (very poor to average) were considered dissatisfied, whereas ratings of four or five (good to excellent) were considered satisfied.

For the multivariate analyses, two separate conditional, backward stepwise logistic regressions were computed using demographics, visit characteristics, and perception variables as predictors of overall satisfaction and likelihood to recommend. All variables assessed were used for these analyses. Subjects were excluded if they did not answer the overall satisfaction or the likelihood to recommend question and/or failed to answer more than 10 of the individual perception items. Not all questions pertained to every patient. For example, if a patient did not have radiographs taken, he/she logically should not rate the question regarding the courtesy of the x-ray technician. For the purposes of the logistic regression, missing data for these data fields were substituted with the average rating of the remaining items for that subject. This was done to preserve the listwise sample size.

RESULTS

Based on the sampling procedure and exclusion criteria 1,181 patients were deemed eligible. These patient's medical charts were reviewed; 1,136 had telephone numbers recorded on their ED visit sheets. Four hundred seventy-eight (42.1%) patients were successfully contacted, and usable data were obtained from 437 (38.5%). Patients with unusable data either refused to participate or could not provide enough data (ie, greater than 10 missing items).

Comparison of the responders and nonresponders revealed that patients who were female and nonurgent were significantly more likely to be contacted than their counterparts ($P < .05$). This suggests that the final sample may not be entirely representative of our ED population as a whole, with females and nonurgent patients being overrepresented. Despite this, the sample breakdown was grossly similar to that of our ED as a whole, with patients being predominantly minority, uninsured, and with a higher percentage of females than males.

Tables 1 and 2 summarize the demographic data and how they related to overall satisfaction and likelihood to recommend, respectively. None of the demographics appeared related to overall satisfaction; however, age and insurance status were related to likelihood to recommend ($P < .05$). Tables 1 and 2 also summarize the visit characteristics and how they related to overall satisfaction and likelihood to recommend, respectively. As can be seen, total length of stay was significantly related to overall satisfaction ($P < .05$), but only marginally related to likelihood to recommend ($P < .10$). The remaining visit characteristics were not statistically related to either of the dependant variables.

Tables 3 and 4 summarize the patients' perceptions of care and how they relate to overall satisfaction and likelihood to recommend, respectively. Each of the variables were related to both dependent variables ($P < .01$), with the vast majority reaching the $P < .001$ level.

Tables 5 and 6 summarize the results of the final logistic regression models. The variables presented represent those that uniquely contributed to identifying dissatisfied patients. Overall satisfaction was significantly related to ($P < .05$): degree to which staff cared about the patient as a person, feelings of safety and security, understandability of the DC instructions, technical skills of nursing staff, and satisfaction with the wait time in treatment area before seen by physician. The final model correctly classified 89.1% of all subjects. Likelihood to recommend was significantly related to ($P < .05$): degree to which staff cared about the patient as a person, understandability of DC instructions, feelings of safety and security, insurance status, age, and care and concern of nursing staff. The final model correctly classified 83.9% of all subjects.

TABLE 1. Relation Between Demographics, Visit Characteristics, and Overall Satisfaction

Variable	Satisfied Patients	Dissatisfied Patients	P Value
Demographics			
Age	35.3 ± 18.2	32.6 ± 14.4	.160 ^t
Gender			
Male	104 (29.3%)	22 (27.2%)	
Female	251 (70.7%)	59 (72.8%)	
Race/Ethnicity			.155 ^x
Black	258 (73.9%)	66 (81.5%)	
Other	91 (26.1%)	15 (18.5%)	
Insurance			.082 ^x
None/free care	280 (80.2%)	70 (88.6%)	
Insured	69 (19.8%)	9 (11.4%)	
Visit Characteristics			
Priority code*			.073 ^x
Emergent	34 (9.9%)	4 (5.1%)	
Urgent	131 (38.0%)	23 (29.1%)	
Nonurgent	180 (52.2%)	52 (65.8%)	
Time of day	11:20 ± 5:07	12:02 ± 5:02	.263 ^t
Actual LOS	201 min ± 121	238 min ± 146	.022 ^t
Volume/census	261 ± 46	262 ± 54	.942 ^t
Day of week			.489 ^x
Weekend	63 (17.7%)	17 (21.0%)	
Weekday	293 (82.3%)	64 (79.0%)	
Disposition			.625 ^x
Discharge	311 (87.9%)	70 (89.7%)	
Not seen/AMA	25 (7.1%)	6 (7.7%)	
Admit/transfer	18 (5.1%)	2 (2.6%)	

Note. Cells include either the mean ± one standard deviation or cell size and column percentages.

^xChi-squared test.

^tIndependent samples t-test; mean ± one standard deviation reported.

*Triage classification per Waldrop et al.¹⁵

DISCUSSION

We found demographic variables to be largely unrelated to patient's ratings of overall satisfaction. Although uninsured patients showed a weak tendency to be less satisfied than insured patients (primarily Medicaid/Medicare), the relation was not statistically significant. Others have also found weak or no relation between insurance status and satisfaction.^{3,4,6} Consistent with other research conducted in emergency settings,^{2,4,6} but in contrast with studies of other settings (eg, inpatients, outpatient clinics),¹⁶⁻¹⁸ age and gender did not seem to be meaningfully related to satisfaction in our sample.

Two visit characteristics showed weak relations with overall satisfaction: actual LOS and acuity. Actual LOS showed a statistical correlation with overall satisfaction. As would be expected, patients experiencing longer actual visit lengths, measured from registration to discharge/transfer/admit, showed a tendency to be more dissatisfied than those with shorter visits. Although statistically significant, this relation was nevertheless rather weak and did not remain significant in the multivariate analysis. Although previous studies which have included measures of actual length of stay generally show only weak or no relation with overall satisfaction,^{1,2,6} Booth and colleagues⁸ have shown that actual length of wait-times correlated with patients' ratings

of how satisfied they were with those waits. The only other visit characteristic showing any noticeable relation to overall satisfaction was acuity. Following the pattern found in other studies,^{10,11,13} patients who presented with more urgent medical problems showed a tendency to be more satisfied than patients with less urgent conditions. As with actual LOS, the relation was weak, and acuity did not remain in the final model as a salient predictor. This stands in direct contrast with results recently reported by Sun and colleagues,⁵ which found that nonacute triage status remained a significant correlate of patient satisfaction in a multivariate analysis, even after other patient perception factors were included in the model. The reasons for the inconsistency is undetermined.

The common belief among emergency staff is that higher census days and busier EDs are naturally going to produce less satisfied patients. In our study, however, census on the day of presentation showed no relation to satisfaction, which is consistent with Mowen and colleagues'¹⁴ finding that patients' perceptions of crowding do not correlate with satisfaction. Our findings also complement other reports that patients visiting busier EDs are no less satisfied than patients visiting less busy EDs.² Hall and Press² concluded that good technical care and strong interpersonal skills of the staff may outweigh the potential effect of volume.

TABLE 2. The Relation Between Demographics, Visit Characteristics, and Likelihood of Recommending ED to Others

Variable	Likely to Recommend	Unlikely to Recommend	P Value
Demographics			
Age	35.9 ± 18.5	31.1 ± 13.1	.006 ^t
Gender			.767 ^x
Male	98 (28.7%)	27 (30.3%)	
Female	243 (71.3%)	62 (69.7%)	
Race/Ethnicity			.370 ^x
Black	252 (75.2%)	71 (79.8%)	
Other	83 (24.8%)	18 (20.2%)	
Insurance			.018 ^x
None/free care	268 (79.5%)	77 (90.6%)	
Insured	69 (20.5%)	8 (9.4%)	
Visit Characteristics			
Priority code*			.248 ^x
Emergent	34 (10.3%)	4 (4.5%)	
Urgent	120 (36.4%)	34 (38.6%)	
Nonurgent	176 (53.3%)	50 (56.8%)	
Time of day	11:15 ± 4:54	12:20 ± 5:32	.097 ^t
Actual LOS	201 min ± 126	228 min ± 125	.087 ^t
Daily census	260 ± 46	264 ± 51	.460 ^t
Day of week			.883 ^x
Weekend	63 (18.4%)	17 (19.1%)	
Weekday	279 (81.6%)	72 (80.9%)	
Disposition			.881 ^x
Discharge	298 (88.2%)	78 (87.6%)	
Not seen/AMA	25 (7.4%)	6 (6.7%)	
Admit/transfer	15 (4.4%)	5 (5.6%)	

Note. Cells include either the mean ± one standard deviation or cell size and column percentages.

^xChi-squared test.

^tIndependent samples t-test; mean ± one standard deviation reported.

*Triage classification per Waldrop et al.¹⁵

TABLE 3. Relations Between Patient Perceptions of Care and Overall Satisfaction

Item	Satisfied Patients: Mean (95% CI) (Mean Rank)*	Dissatisfied Patients: Mean (95% CI) (Mean Rank)*	P Value
1. Courtesy of the registration desk clerk	4.40 (4.33-4.47) (227)	3.84 (3.61-4.07) (160)	.000 ^U
2. Helpfulness of the registration desk clerk	4.40 (4.33-4.48) (228)	3.80 (3.61-4.03) (155)	.000 ^U
3. Privacy you felt during the registration interview	4.05 (3.94-4.16) (231)	3.16 (2.88-3.44) (145)	.000 ^U
4. The wait time before you were able to register	4.05 (3.95-4.17) (229)	3.33 (3.07-3.59) (153)	.000 ^U
5. Care and concern shown by the nurses	4.54 (4.47-4.60) (236)	3.67 (3.41-3.93) (146)	.000 ^U
6. Nurses kept you informed about your treatment and any delays	4.18 (4.07-4.29) (238)	2.91 (2.61-3.22) (129)	.000 ^U
7. Technical skill of the nurses	4.50 (4.43-4.56) (236)	3.57 (3.32-3.82) (126)	.000 ^U
8. The wait time in the treatment area before you were seen by a doctor	3.93 (3.83-4.04) (234)	2.91 (2.65-3.17) (131)	.000 ^U
9. Care and concern shown by the doctors	4.55 (4.47-4.62) (236)	3.65 (3.39-3.90) (131)	.000 ^U
10. How well the doctors kept you informed about your condition	4.33 (4.22-4.44) (234)	3.31 (3.02-3.60) (132)	.000 ^U
11. How well the doctors explained your tests and treatment	4.36 (4.24-4.47) (207)	3.21 (2.89-3.54) (107)	.000 ^U
12. How well doctors explained what to expect next	4.32 (4.20-4.45) (205)	3.17 (2.86-3.48) (103)	.000 ^U
13. Advice about caring for yourself at home and obtaining follow-up medical care	4.23 (4.10-4.36) (226)	3.22 (2.92-3.53) (130)	.000 ^U
14. Discharge instructions were explained and easy to understand	4.28 (4.18-4.38) (220)	3.27 (2.94-3.59) (133)	.000 ^U
15. You understood the instructions and could easily follow them	3.92 (3.78-4.05) (218)	2.83 (2.50-3.16) (131)	.000 ^U
16. Courtesy of the X-ray technician	4.71 (4.62-4.80) (98)	4.34 (3.96-4.73) (80)	.037 ^U
17. Degree to which staff cared about you as a person	4.45 (4.38-4.53) (241)	3.11 (2.87-3.36) (101)	.000 ^U
18. Courtesy shown your family and friends	4.31 (4.17-4.44) (141)	3.00 (2.57-3.43) (67)	.000 ^U
19. Staff kept your family and friends informed about your condition and treatment	3.87 (3.69-4.06) (135)	2.57 (2.10-3.04) (72)	.000 ^U
20. Your feeling of safety or security while in the emergency room	4.24 (4.15-4.32) (238)	3.21 (2.93-3.48) (129)	.000 ^U
Perceived LOS	190 min (176-203)	254 min (220-289)	.001 ^t

Note. Sample size varies between 189 (Courtesy of X-ray tech) to 437 (Care and concern shown by nursing staff).

*Mean rank reported for Mann Whitney U test.

^UMann Whitney U test.

^tIndependent samples t-test.

All of the patient perception variables, including perceptions of total length of stay, showed strong univariate relations with overall satisfaction. The fact that every one of the 21 indicators showed such strong associations with overall satisfaction suggests that patients' perceptions of care, in general, are more important determinants of overall satisfaction than demographics and visit characteristics. The primary conflict in the literature revolves around determining which specific aspects of care are the most important.

Five perception variables account for most of the variance in overall satisfaction for the final model (Table 5). The degree to which the patient felt ED personnel cared for him or her as a person was the most powerful predictor of overall

satisfaction. Recently, a study published by Yarnold and colleagues⁷ also found the most important determinant of satisfaction was whether the patient felt he/she had been cared for as a person. Ninety-nine and one-half percent of Yarnold's subjects who rated their satisfaction with this item as good or excellent also rated their overall satisfaction as good or excellent. Patients want staff to treat them with respect and dignity as an individual. Staff should avoid appearing apathetic or indifferent when interacting with patients, even when under the pressure of a busy ED.

The second and third most powerful predictors of satisfaction showed similar predictive power. If patients reported feeling safe and secure in the ED, they also were more likely

TABLE 4. Relations Between Patient Perceptions of Care and Likelihood of Recommending ED to Others

Item	Likely to Recommend: Mean \pm SD (Mean Rank)*	Unlikely to Recommend: Mean \pm SD (Mean Rank)*	P Value
1. Courtesy of the registration desk clerk	4.39 (4.31-4.47) (224)	3.96 (3.77-4.16) (165)	.000 ^U
2. Helpfulness of the registration desk clerk	4.39 (4.31-4.46) (224)	3.95 (3.75-4.14) (165)	.000 ^U
3. Privacy you felt during the registration interview	4.04 (3.93-4.15) (226)	3.33 (3.06-3.61) (156)	.000 ^U
4. The wait time before you were able to register	4.04 (3.93-4.15) (225)	3.52 (3.29-3.75) (160)	.000 ^U
5. Care and concern shown by the nurses	4.54 (4.46-4.59) (233)	3.78 (3.55-4.02) (150)	.000 ^U
6. Nurses kept you informed about your treatment and any delays	4.12 (4.00-4.24) (233)	3.25 (2.99-3.51) (148)	.000 ^U
7. Technical skill of the nurses	4.48 (4.42-4.55) (232)	3.76 (3.54-3.97) (138)	.000 ^U
8. The wait time in the treatment area before you were seen by a doctor	3.93 (3.81-4.04) (230)	3.08 (2.83-3.30) (142)	.000 ^U
9. Care and concern shown by the doctors	4.51 (4.43-4.59) (230)	3.92 (3.71-4.14) (151)	.000 ^U
10. How well the doctors kept you informed about your condition	4.33 (4.21-4.43) (230)	3.47 (3.19-3.74) (144)	.000 ^U
11. How well the doctors explained your tests and treatment	4.30 (4.17-4.42) (200)	3.62 (3.32-3.93) (138)	.000 ^U
12. How well doctors explained what to expect next	4.29 (4.16-4.42) (200)	3.48 (3.17-3.79) (128)	.000 ^U
13. Advice about caring for yourself at home and obtaining follow-up medical care	4.21 (4.08-4.34) (222)	3.43 (3.12-3.73) (144)	.000 ^U
14. Discharge instructions were explained and easy to understand	4.24 (4.13-4.34) (214)	3.57 (3.28-3.85) (147)	.000 ^U
15. You understood the instructions and could easily follow them	3.89 (3.74-4.34) (215)	2.99 (2.68-3.30) (140)	.000 ^U
16. Courtesy of the X-ray technician	4.73 (4.63-4.82) (98)	4.36 (4.06-4.67) (75)	.003 ^U
17. Degree to which staff cared about you as a person	4.46 (4.38-4.54) (239)	3.27 (3.03-3.51) (111)	.000 ^U
18. Courtesy shown your family and friends	4.33 (4.19-4.46) (139)	3.11 (2.68-3.54) (71)	.000 ^U
19. Staff kept your family and friends informed about your condition and treatment	3.93 (3.75-4.12) (137)	2.57 (2.14-2.99) (68)	.000 ^U
20. Your feeling of safety or security while in the emergency room	4.24 (4.16-4.33) (236)	3.26 (3.02-3.51) (134)	.000 ^U
Perceived LOS	187 m (174-200)	252 m (219-285)	.001 ^t

Note. Sample size varies between 189 (Courtesy of X-ray tech) to 437 (Care and concern shown by nursing staff).

*Mean rank reported for Mann Whitney U test.

^UMann Whitney U test.

^tIndependent samples t-test.

to report higher overall satisfaction. No other studies have included a measure of this aspect of care, making integration into the existing literature difficult. This finding may be a by-product of the environment of the hospital we work in. Our ED sees a high volume of psychiatric patients, victims of crime, and violent patients. Our hospital also provides health care to most of the prison and detention centers in the area; hence, detainees and prison inmates often occupy beds next to regular patients. Security guards always accompany the prisoners and others are stationed at strategic, highly visible areas of the hospital and are an ever-present sight. It may be that such an environment naturally arouses concerns regarding safety and security. Our data indicate that those

who feel threatened or unsafe are also more likely to report being generally dissatisfied with their visit overall. This finding awaits replication in other samples before conclusions can be made as to whether it is unique to our environment or whether such a pattern also is typical of other hospitals. If so, it would have important implications for security measures, not just as a means of insuring the safety of the patients and ED staff alike, but also as a means of maximizing patient satisfaction.

The understandability of the DC instructions formed the third most powerful predictor in the final model. Other studies including similar measures of the quality of DC instructions have found that, although related to overall

TABLE 5. Final Logistic Regression Model Predicting Overall Satisfaction

Item	R	P Value	Final Odds Ratio (95% Confidence Interval)
Degree to which staff cared about you as a person	.251	.000	2.97 (1.95, 4.50)
Feelings of safety and security	.167	.000	1.97 (1.35, 2.86)
Understood DC instructions and could easily follow at home	.150	.001	1.53 (1.18, 1.97)
Technical skills of the nurse	.100	.016	1.79 (1.11, 2.86)
Wait time in treatment area before seen by MD	.100	.018	1.46 (1.07, 2.00)

Note. R, partial correlation between the dependant variable and the independent variable; Final Model Statistics: -2 Log Likelihood, 218.7; Goodness of Fit, 480.1; χ^2 , 165.6, $P < .001$; 89.1% of cases were correctly classified.

satisfaction, the strength of the relation is generally smaller than other variables, such as the caring and concern of the staff or the amount of information given to the patient about his/her condition.⁶ Bursch and colleagues¹ found that satisfaction with discharge instructions, although significant at the univariate level, did not remain significant in the final multivariate model.

Technical skills of the nursing staff appeared to be important to our patients and weighed in as the fourth most powerful predictor of overall satisfaction. Raper³ found that patients' perceptions of the nursing staff's technical competence had little to do with overall satisfaction with the ED nurse or their patients' likelihood to recommend the ED to others. In contrast, Rhee and Bird⁴ found it to be the most important predictor of overall satisfaction. Our results suggested that, in our sample, evaluations of whether the nursing staff were competent helped to determine whether patients left the ED satisfied, although not to the degree the other perception variables discussed previously did. It is not well understood what factors influence a patient's assess-

TABLE 6. Final Logistic Regression Model Predicting Likelihood to Recommend

Item	R	P Value	Final Odds Ratio (95% Confidence Interval)
Degree to which staff cared about you as a person	.256	.000	2.54 (1.80, 3.58)
Understood DC instructions and could easily follow at home	.143	.002	1.44 (1.15, 1.80)
Feelings of safety and security	.135	.002	1.63 (1.19, 2.23)
Insurance status (1 = insured)	.080	.033	2.88 (1.09, 7.61)
Age (years)	.077	.038	1.02 (1.00, 1.04)
Care and concern of nursing staff	.070	.047	1.46 (1.00, 2.11)

Note. R, partial correlation between the dependant variable and the independent variable; Final Model Statistics: -2 Log Likelihood, 277.3; Goodness of Fit, 349.0; χ^2 , 130.3, $P < .001$; 83.9% of cases were correctly classified; Bold items are statistically significant for both models (overall satisfaction and likelihood to recommend).

ment of a health care provider's technical skills, although likely possibilities include the general demeanor of the provider, the degree to which the provider appears professional and confident, and how much pain and discomfort the patient is put through during their visit. Further research is needed on this issue, specifically as it relates to practicing emergency medicine.

Patients' satisfaction with the wait time for the physician once they were in the treatment area was the final predictor of overall satisfaction. Interestingly, neither actual nor perceived total length of stay remained significant in the final model. These results seem to corroborate conclusions made by other investigators on this issue.^{2,6} Namely, actual length of stay and wait-times do not appear to be very important in determining overall satisfaction. Whether patients believe the lengths to be excessive or inappropriate, however, does influence their satisfaction with those wait times.^{1,6,8,14} In the first published study to look at the determinants of satisfaction with emergency care, Bursch et al¹ not only found that wait for care while in the treatment area was a significant predictor, she found that it was the most important predictor. We found that, although significant, it was less important than the other care variables in the final model, and accounted for less than half the amount of variance attributed to the first predictor (staff cared for patient as a person). Similarly, Hall and Press² found that, in order of importance, satisfaction with wait times was below satisfaction with nursing, but above satisfaction with tests and actual length of time in the ED. Although it appears that satisfaction with and perceptions of wait times are important in determining overall satisfaction, their relative importance as compared to other variables remains inconclusive.

The results obtained for predicting likelihood to recommend the ED to others shared both similarities and differences with results pertaining to overall satisfaction. The three largest predictors were the same: perception of being cared for as a person, degree to which the patient understood the DC instructions, and feelings of safety and security. However, unlike overall satisfaction, two demographic variables remained significant in the final model: age and insurance status. Patients who were likely to recommend the ED to others were older than patients unlikely to recommend the ED to others. Although this is consistent with research from inpatient and outpatient settings,¹⁶⁻¹⁸ it is inconsistent with other research conducted in emergency medical settings, which has generally found no relation between age and overall satisfaction or likelihood to recommend.^{2,4,6} Patients who were not likely to recommend the ED to others also were more likely to be uninsured/indigent, another finding inconsistent with previous studies related to emergency medical settings, which has shown no differences based on insurance status.^{3,4,6}

The final difference between the two models lay in the last predictor. Instead of the final predictor being wait time for physician, as was the case with overall satisfaction, the final predictor of likelihood to recommend was caring and concern of the nursing staff. Why these results differed in this manner is not known. The discrepancy reflects the controversy in the literature regarding the relative importance of wait times and delays. Although it would seem that satisfaction with wait-times and length of stay may be

important, just how important may differ dramatically between studies. If we had used likelihood to recommend as the sole dependent variable in our study, we might have concluded that satisfaction with wait times were of negligible importance, when, in actuality, our own model predicting overall satisfaction argues that it is important (though perhaps not as important as other care perception indicators). Finally, the fact that care and concern of the nursing staff supplanted wait time for physician in the final model predicting likelihood to recommend is noteworthy. It further reinforces the pivotal importance of the patient-provider relation on patients' positive regard towards the ED.

Several limitations exist in our study. Because so many patients were satisfied with their care, the cell sizes for dissatisfied patients for some variables were very small. For example, only four dissatisfied patients fell into the highest acuity level. Because of the small cell sizes and because the cells were, at times, dramatically unbalanced, the power of our statistical analyses may have suffered. Generally speaking, the same problem exists in most patient satisfaction research, and the only solution is to continue to assess until one reaches a substantial number of dissatisfied patients.

Our assessment, though spanning several domains, was not comprehensive. It is nearly impossible to conduct a completely comprehensive assessment of patient satisfaction attributable to the labor intensiveness and intrusiveness of such a study. Because we were selective about the variables examined, we may not have included important predictors. Our own study illustrated this point. We included an assessment of perceived safety and security because we speculated it might be a relevant domain for our patients. We did find that it was a very important predictor of both overall satisfaction and likelihood to recommend. No other published study has assessed this variable. There may be other important variables our study has not examined.

The sampling methodology is a limitation in our study. Only 38% responded to our study. In addition, we excluded patients who were homicidal/suicidal and patients who were prisoners. We excluded these patients because (1) the interviewer was not trained in crisis management, and (2) contact of prisoners via telephone was deemed prohibitive. Inclusion of these groups may have changed the results.

Finally, our ED is not like most EDs. Because it is part of the unique state-supported health care system of Louisiana, our demographics may not reflect those of other EDs. However, we believe that our ED is similar in many ways to other municipal EDs (ie, state-, county-, or city-supported hospitals). Furthermore, although most other EDs may not have as many indigent or government insured patients, all EDs see at least a subsample of these types of patients. We see this difference as a strength rather than a weakness, since it is precisely these patients which have been understudied and underserved.

CONCLUSION

Patients' perceptions across a variety of care domains consistently predicted satisfaction. Specifically, the degree to which patients felt as though they were cared for as a person showed the strongest predictive utility for both overall satisfaction and likelihood to recommend. Other care perceptions replicated in both models included perceptions

of safety and the quality of the DC instructions. However, we observed some differences between our final models predicting overall satisfaction and likelihood to recommend, which might help to explain some of the inconsistencies found in the literature. Measures of overall satisfaction and likelihood to recommend, though correlated highly, probably do not measure identical constructs. Despite the differences, the results of our study reinforce the finding that subjective experiences relate more strongly and more consistently to satisfaction with care than patient or visit characteristics. Future research should focus on identifying those variables responsible for improving patients' perceptions.

The authors gratefully acknowledge Lawanda Jones for her valuable assistance with data entry and manuscript preparation and Glenn N. Jones, PhD for his statistical consultation and editorial comments.

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